

R E M A R K S

As a preliminary matter, Examiner Delacroix Muirhei is sincerely thanked for courtesies extended to Applicants' undersigned representative during a personal interview on February 17, 2004. The substance of the matters discussed during the interview is incorporated in the remarks below.

Claims 1-28 and 35-46 are pending in the application, with claims 29-34 having been previously cancelled without prejudice in an Amendment of March 20, 2003.

Applicants point out that claims 24-28 stand allowed.

By this Amendment, claim 1 has been amended and new claims 35-46 have been added. Applicants respectfully submit that the claim amendments and the subject matter of the new claims are fully supported by the original disclosure. The amendments to claim 1 are supported in the specification at, for example, page 17, lines 2-28. Claims 35-38 are supported in the specification at, for example, page 22, line 17 to page 23, line 20. Claims 39 and 42 are supported in the specification at, for example, page 15, line 32 to page 16, line 17. Claims 40 and 43 are supported in the specification at, for example, page 19, lines 10-19. Claim 41 is supported in the specification at, for example, page 23, lines 5-9. Claims 44-46 are supported in the specification at, for example, page 11, lines 9-31. Accordingly, Applicants respectfully request approval and entry of these claim amendments and new claims.

Claims 1-9, 12, 13, and 15-23 have been rejected under 35 U.S.C. § 102(b) (hereinafter "Section 102(b)") as being anticipated by Wada et al., *Removal of Phenols and Aromatic Amines from Wastewater by a Combination Treatment with Tyrosinase and*

a Coagulant, Biotechnology and Bioengineering, Vol.45, pp. 304-309 (1995) (hereinafter "Wada").

Anticipation under Section 102 requires that a prior art reference disclose every claim element of the claimed invention. *E.g.*, *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1574, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986). Anticipation must be found in a single reference. *E.g.*, *Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc.*, 726 F.2d 724, 726-27, 220 U.S.P.Q. 841 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. *E.g.*, *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 U.S.P.Q. 1264 (Fed. Cir. 1984).

Applicants respectfully submit that the applied document, Wada, does not meet this standard of anticipation. Accordingly, Applicants respectfully traverse this rejection.

Claim 1 as currently amended recites a method of producing a modified chitosan polymer or oligomer, comprising reacting (in a homogenous phase solution) an enzyme with at least one phenolic compound in the presence of a chitosan polymer or oligomer. This reaction either causes or allows (e.g., via pH adjustment) for the production of an insolubilized modified chitosan polymer or oligomer, which is subjected to a solubilizing step, according to amended claim 1. The solubilizing of the modified chitosan polymer or oligomer may be useful for a variety of applications. (See specification at page 22, lines 18-22.) Further, since the modified chitosan polymer or oligomer can be prepared having a low degree of substitution, the unmodified amino sites of the modified chitosan polymer or oligomer may be reacted and derivatized to enable the production of a wide variety of chitosan derivatives.

In contrast, Wada discloses a method for removal of phenol and aromatic amine pollutants from wastewater. Wada's method uses an amino-containing cationic polymer, such as chitosan, and tyrosinase for precipitating and removing the pollutants from the wastewater. The goal in Wada is to purify the wastewater. The reaction product of the cationic polymer, tyrosinase and phenol pollutant constitute waste. Wada does not teach or reasonably suggest that the precipitated waste product has any utility that may be taken advantage of by a solubilization step.

For these reasons, the subject matter of amended claim 1 is neither disclosed nor reasonably suggested by Wada, and withdrawal of the Section 102(b) rejection of claim 1 is respectfully requested. Applicants further respectfully submit that claims 2-9, 12, 13, and 15-23, being dependent from claim 1 and including all of the distinguishing features thereof, are allowable over Wada for the above-advanced reasons and for the additional reason that the added subject matter of the dependent claims, when taken in conjunction with the subject matter of claim 1, is patentable over the applied art.

For these reasons, reconsideration and withdrawal of the Section 102(b) rejection are respectfully requested.

Claims 10, 11, and 14 have been rejected under 35 U.S.C. § 103(a) (hereinafter "Section 103(a)") as being unpatentable over Wada.

Applicants respectfully traverse the rejection.

Applicants further respectfully submit that claims 10, 11, and 14, being dependent from claim 1 and including all of the distinguishing features thereof, are allowable over Wada for the above-advanced reasons and for the additional reason that the added subject matter of the dependent claims, when taken in conjunction with claim 1, is patentable

over the applied art. Accordingly, Applicants respectfully request reconsideration and withdrawal of the Section 103(a) rejection.

New claims 35-40 depend from claim 1 and, therefore, are respectfully submitted to be allowable for the above-advanced reasons.


New claims 41 and 42 depend from allowed claim 24 and, therefore, are respectfully submitted to be allowable.

New claim 43 recites a method of producing a modified chitosan polymer or oligomer, comprising reacting (in a homogenous phase solution) an enzyme with at least one phenolic compound selected from the group consisting of a phenolic protein and a phenolic peptide in the presence of a chitosan polymer or oligomer. Applicant respectfully submits that Wada does not teach the use of phenolic proteins and peptides.

New claims 44-46 recite a method of producing a modified chitosan polymer or oligomer, comprising dissolving a chitosan polymer or oligomer in solution at a first acidic pH; raising the pH of solution to a second acidic pH less than about 6.5; and reacting an enzyme with at least one phenolic compound in the presence of the chitosan polymer or oligomer, wherein the reaction is carried out in a homogenous phase solution. Applicants respectfully submit that Wada does not disclose or reasonably suggest the pH manipulation steps set forth in claim 44.

If, after reviewing the above amendments and remarks, the Examiner believes that any issues remain unresolved, the Examiner is respectfully requested to contact the undersigned, by telephone, to schedule an interview to address such issues.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Thomas P. Liniak", written over a horizontal line.

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